LABORATORY FOR

ATMOSPHERES

Section 6

6. Outreach Activities

The Laboratory for Atmospheres continues to support Goddard's role in NASA's efforts to serve the scientific community, inspire the nation, and foster education. The Laboratory's outreach activities include joint ventures with universities, as discussed in Section 2, outreach lectures, mentoring programs, increased public affairs, visualization software development, data archival and distribution programs (i.e. Global Learning and Observations to Benefit the Environment [GLOBE]), and multicultural outreach activities.

- Interaction with Howard University

The Laboratory has entered joint research and educational activities with the Center for the Study of Terrestrial and Extraterrestrial Atmospheres (CSTEA) at Howard University. The Center is entering its second five-year funding cycle as part of the NASA University Research Centers at Minority Institutions Program. The program is designed, among other things, to increase participation by faculty and students of Historically Black Colleges and Universities (HBCU) in mainstream research. CSTEA has designated Goddard Space Flight Center as its lead installation. The Laboratory for Atmospheres has been chosen as the primary technical monitor.

Ongoing collaborative research exist between Laboratory scientists and CSTEA researchers. These efforts take advantage of the Laboratory's expertise in remote sensing, climate modeling, atmospheric chemistry, and laser technology. A series of nine lectures was presented this year by Laboratory scientists as a part of the CSTEA lecture series. The Laboratory also plays a key role in the ongoing curriculum development of the atmospheric sciences program at Howard.

The Laboratory participates in ongoing student programs with CSTEA. The Summer Institute and Research Traineeship in Atmospheric Sciences (SIRTAS) continues to present 20-30 minority undergraduate students the opportunity to tour Laboratory research facilities at GSFC. Laboratory scientists have given lectures and participated on panels during this 8-week summer program.

- Interaction with Western Maryland College (WMC)

GSFC has a Memorandum of Agreement with WMC to promote the use and development of a new lidar technology--a scanning holographic telescope developed with the participation of the University of Maryland. GSFC is providing lidar system components, related test equipment, guidance, and collaboration. WMC has constructed a lidar observatory on their Westminister, Maryland campus as a permanent facility to house and further develop this technology and its applications. Together, Laboratory and WMC scientists have built the Prototype Holographic Atmospheric Scanner for Environmental Remote Sensing (PHASERS). Science applications for such a system include measurements and characterization of clouds, aerosols, and winds. Development of this technology will allow significant weight savings over conventional technology for earth observing lidar telescopes. The PHASERS facility will be the basis for many student projects and serve as a testbed for new developments in this field.

- Lectures

Laboratory personnel continue to lecture about atmospheric science to a wide range of audiences, including those in local community organizations, various interest groups visiting GSFC, industrial employees, students in K-12 education programs, and students and faculty at colleges and universities. The CSTEA lecture series and the Science Engineering Education (SEE) Day at Prince George's Community College are just two of many programs in which Laboratory personnel lecture.

- Mentoring

Scientists in the Laboratory serve as mentors to students at the high school, undergraduate, and graduate levels in various programs sponsored by the Laboratory, GSFC and NASA.

Programs at the high school level include the Summer Student Assistantship Program, a cooperative program of the Laboratory with Caelum Research Corporation. The aim of this program is to introduce qualified high school students, especially students traditionally under-represented in the Earth sciences, to atmospheric sciences and related disciplines. In only three years, this program has introduced six students into atmospheric science research. Other high school programs include partnerships with the Eleanor Roosevelt High School Science and Technology Magnet program and will eventually include other schools in the area.

Programs at the undergraduate level include the Summer Institute on Atmospheric and Hydrospheric Sciences and the NASA Academy. Graduate level programs include the USRA/GSFC Graduate Students Program in the Earth Sciences and the Graduate Student Researcher's Program. Postgraduate programs include NRC Resident Research Associateships and NASA/University Joint Venture (JOVE) appointments. Laboratory scientists and engineers also mentor high school and university level teachers in such programs as the Maryland Initiative and the Summer Faculty Fellows program.

- Public Affairs and Demonstrations

Laboratory scientists were interviewed in popular media outlets (newspapers, magazines, and television) about results of recent research and vital information on weather and climate. The work of Laboratory personnel has been prominently featured this year in major outlets such as Time, Life, and Encyclopedia Britannica. Laboratory personnel have also been featured on major network newscasts and in the PBS Educational Series "Real Science."

Personnel from the Laboratory continue to prepare and present demonstrations of scientific instruments constructed, numerical models developed, and results of scientific investigations at national meetings, local visitor centers, science fairs, and the Smithsonian Institution.

- Public Use of Remote Sensing Data (RSD)

The RSD Program was established to encourage the development of innovative applications of earth and space science remotely sensed data maintained by NASA and other agencies for use by schools, businesses and the general public. Laboratory scientists in collaboration with personnel of the Visualization Studio of the Space Data and Computing Division (SDCD) are participating in this program supported by the NASA Information Infrastructure Technology and Applications (IITA) initiative. Progress of the activities in the program can be followed by watching the RSD server at http://rsd.gsfc.nasa.gov/rsd/.

- Global Learning and Observations to Benefit the Environment (GLOBE) Visualization Project

Scientists in the Laboratory, in conjunction with personnel in the Visualization Studio of the SDCD, support GLOBE, a White House program directed by Vice President Gore, which is a worldwide science and education program coordinating the work of K-12 students, teachers, and scientists to monitor the global environment. Daily visualizations of student observations and of reference data are created and the images distributed via World-Wide Web. Locally, Laboratory scientists work with the Prince George's County (MD) school system and the Owens Science Center in bringing GLOBE into all classrooms. The GLOBE visualization efforts have received the NASA group achievement award (1996). The award-winning GSFC GLOBE internet web page serves over 3000 schools in 45 countries and the general public. The GLOBE Visualization server is on the World Wide Web at http://globe.gsfc.nasa.gov/globe/.

- Visualization for Science and Public Outreach

Laboratory scientists have played an instrumental role along with the Visualization Studio of the SDCD in the Goddard scientific visualization effort in support of the Smithsonian Institution HoloGlobe Project. A variety of high-resolution color animations of global datasets produced at GSFC are displayed on the HoloGlobe. Other visualizations produced by the group are on display at the National Museum of Natural History and the National Air and Space Museum.

- GOES Weather Satellite Images On-Line

The Laboratory operates two realtime antennas for receiving GOES weather satellite imager and sounder data. These are placed in 24-hour deep data pools that are web-accessible. Scientists at NASA and university sites use these calibrated and Earth-located radiances during field campaigns. The general public also makes considerable use of these images, especially during hurricane season. Under a cooperative agreement with a Washington, DC television station (NBC 4) large GOES images are supplied for their use in their daily weather broadcasts. Digital scrapbooks of enhanced GOES pictures and movies are also kept on-line, and are one of the most popular services in the Laboratory. For more information, http://climate.gsfc.nasa.gov/~chesters/goesproject.html.

- Multicultural Outreach

The Laboratory continues to foster NASA's advocacy of Multicultural Diversity and Outreach. Many of the mentoring and lecture programs reach diverse groups in local, state, and national institutions. Laboratory personnel also serve on both the GSFC and Earth Science Directorate Multicultural Advisory Teams. Nationally, the American Meteorological Society's (AMS) Board on Women and Minorities is chaired by a member of the Laboratory.

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